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SECURITY INFORMATION

CENTRAL INTELLIGENCE AGENCY

Office of Research and Reports

Provisional Report No. 10
(CIA/RR PR-10)

INLAND WATER TRANSPORT IN THE USSR

7 January 1952

Note

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DOCUMENT NO. 2
NO CHANGE IN CLASS. ☐
☐ DECLASSIFIED
CLASS. CHANGED TO: TS S C
NEXT REVIEW DATE: 1989
AUTH: HR 70-2
DATE 1-10-79 REVIEWER: 372044

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CIA/RR PR-10

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SECURITY INFORMATION

INLAND WATER TRANSPORT IN THE USSR

Summary

Inland water transport in the USSR accounts for only about 8 percent of all ton-miles of inland freight traffic. This distinctly secondary role is, however, not a new development. The relative importance of inland water transport in the economy of the USSR has been declining steadily for many years despite continuing efforts of Soviet planners to increase the share of domestic traffic carried on inland waterways. Nevertheless, despite the relatively small percentage of total traffic which it carries, inland shipping is essential to the Soviet economy for the movement of such bulk cargoes as construction materials, coal, and timber. The waterways, furthermore, provide virtually the sole mode of transport in some areas, particularly in Siberia.

The total length of the Soviet inland water system is about 75,000 miles. In the west the Volga and Dnieper-Bug routes are the longest, while in Siberia and the east the Ob, the Irtysh, the Lena, and the Amur river systems comprise the major routes. The physical characteristics of the system impose certain restrictions which cannot be easily overcome. For example, except in the west, all major river routes run north and south, while the main lines of traffic lie east and west across the USSR. Furthermore, large sections of the inland water system are frozen for several months during each year, thus limiting their year-round availability.

The USSR has numerous plans for the large-scale expansion and improvement of inland waterways. The Volga and its tributaries are receiving the most attention, with numerous dam and canalization projects reported currently underway. The Volga-Don Canal, now scheduled for completion in 1952, will, when finished, bring about a revolutionary change in Soviet inland water transport by enabling vessels to move freely between the Caspian and Black seas.

While traffic data are generally sparse, it is possible to establish reasonably accurate figures for certain key years. In 1913 the inland water system hauled 37.1 million short tons, and in 1937 the figure had risen to 73.8 million short tons. In 1945, however, because of the wartime destruction of vessels and canals the volume of traffic declined to 39.8 million short tons. The 1950 Plan called for the movement of 100.9 million short tons, and fulfillment of the Plan for 1951 required a 15-percent increase above 1950. The 1950 Plan was about 90 percent fulfilled. No traffic breakdown by area is available for 1950, but in the past the Volga River usually has handled 25 percent of the

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total inland water traffic, and the Volga System in its entirety close to 50 percent.

The Soviet inland water fleet is generally of poor quality largely as a result of the low level of efficiency among the workers and the poor condition of vessel repair and maintenance facilities. The fleet consists principally of barges of 300 to 300 gross registered tons (GRT), although on the larger rivers such as the Volga some vessels of as much as 12,000 GRT are being operated. Most of the dry cargo barges are constructed of wood, whereas tanker barges usually are constructed of steel. Tugs are extremely important in Soviet inland water transport operations, since they furnish the propulsion of a large part of the fleet. Tugs range from 30 to 1,500 horsepower, the majority of them being from 400 to 1,000 horsepower.

The USSR is acquiring relatively little inland water tonnage from abroad, and little information is available on domestic construction. The major foreign sources appear to be the Satellites and Finland.

The material and manpower requirements of the Soviet inland water system are considerable. It has been estimated that in 1952 the finished steel requirements of the inland water fleet will total 404,300 metric tons, while the petroleum requirements of the inland water fleet in 1952 are estimated as being 335,200 metric tons. Completely reliable data are not available for the number of people employed in Soviet inland water transport, but it has been estimated that 292,000 workers were employed in 1950.

I. Introduction.

1. Importance of Inland Water Transport.

Inland water transport in the USSR ranks second to the railroads in importance in inland transportation. At present the system handles only about 8 percent of all ton-miles of inland freight traffic, but this relatively small percentage of the total does not reflect the true importance of inland water transport to the economy of the country. Inland water transport, for example, is an important medium for certain bulk goods, such as construction materials, ores, coal, and especially timber. Certain areas, moreover, particularly in Siberia, are almost entirely dependent upon waterways for the transport of goods.

During peacetime the waterways of western USSR have a great potential value which is slowly being exploited. Their full utilization would relieve the rail network in European USSR of the burden of much bulk freight, such as coal, lumber, and ores, thereby increasing considerably the capabilities of the rail system to carry other key commodities. The strategic significance of such shifts in traffic should not be overlooked. On the other hand, the economic and strategic significance of a large number of navigable Soviet rivers in Asia is sharply limited by the fact that they are virtually all north-south lines of communication, whereas major traffic movements in this area are east-west. This disadvantage is compounded by the fact that the rivers flow from south to north into the Arctic Ocean area and are unusable in large part for many months of the year because of ice conditions.

From the strategic point of view, Soviet inland shipping is important because of its capabilities for supporting Soviet amphibious operations across short stretches of water against nearby areas. There are numerous areas around the Soviet periphery where large numbers of small craft constitute a major addition to the ocean-going fleet. In the Baltic, for example, attacks could be supported by large numbers of craft drawn from the extensive waterway routes converging in the Leningrad-Riga area. In the Black Sea the fleets of the Dnieper and the Don could be utilized against Turkey. In the Caspian the extensive inland water fleet could support operations against Iran. The inland water fleet available in the Far East, though probably much smaller than that in the west and south, could, for example, constitute a very important addition to Soviet capabilities for water transport over the short distance to Taiwan. This fleet also could be usefully employed in operations southward along the Chinese coast.

2. Historical Development.

In terms of traffic the inland waterway system of the USSR always has played a secondary role to the rail system. In the period before 1917 the importance of inland water transport steadily declined as the rail system handled an increasing proportion of total traffic, and the downward trend has continued under Soviet control. For example, by 1937 the inland waterway system was carrying slightly more than twice its 1913 traffic, while the rail lines were carrying four times as much as they had in the same year. Inland waterways received little real attention during the early years of the Soviet regime. Not until the Fourth Five Year Plan (1946-50) did transport by inland waterways receive over-all detailed attention. Before that time, major canal projects had been carried on, but fleets and facilities had been relatively neglected. At present, rail lines still carry about 11 times the amount of traffic carried by the inland waterway system, and there is little prospect that this proportion will change appreciably in the near future, unless there is a greatly accelerated program to emphasize the role of inland water transport. The following table shows the development of the inland waterway network in the USSR and the vessel inventory:

Table 1

Development of Inland Waterways in the USSR 1/*
(Excluding the Caspian Sea)
1913, 1937, 1940, and 1950 (Plan)

	1913	1937	1940	1950 (Plan)
Navigable Waterways (Miles)	44,740	52,506	60,000	71,500
Artificial Waterways (Miles)	N.A.	1,780	N.A.	N.A.
Total Cargo Shipped (Million Short Tons)	37.1	71.3	73.0	100.9
Number of Self-propelled Vessels	5,302	N.A.	3,012 a/	N.A.
Total Horsepower (Thousands)	1,039	N.A.	723 a/	912
Number of Non-self-propelled Vessels	23,149	N.A.	9,635 a/	N.A.
Gross Tonnage (Million Short Tons)	13,673	N.A.	8,060 a/	7,000

a. 1939.

3. General Description of the Present Inland Waterway System.

The European sector of the USSR, comprising about one-quarter of all Soviet territory, contains more than half of all river routes and accounts for about 90 percent of all Soviet inland water traffic. 2/

* Footnote references in arabic numerals refer to sources listed in Appendix B.

Barges constitute the major part of the inland water fleet. On the Volga, barges generally range from 1,000 to 4,000 gross registered tons (GRT), although barges up to 12,000 GRT are in use. Barges on some of the Siberian rivers range up to 3,000 GRT. On the whole, however, these unusually large barges are not numerous, and the inland water fleet is made up predominantly of smaller craft from 300 to 860 GRT. The smaller waterways utilize large numbers of craft from 80 to 250 GRT. Most general-cargo barges are constructed of wood, whereas tanker barges are generally of steel construction. Tugs are usually wheel-driven, the shallow depths of the waterways making screw propulsion impracticable. Tugs range from 30 to 1,500 horsepower, the larger units being used for long-distance operations. The horsepower of most tugs, however, varies between 400 and 1,000, while on the less important routes the tugs may be of only 30 to 250 horsepower. Little is actually known of the technical details of self-propelled river vessels, which form only a small minority of the inland water craft.

The Volga is the most important river of the USSR. The Volga itself carries about one-quarter of all Soviet river traffic, and the Volga system accounts for nearly one-half of all such traffic. 3/ The Don already is the leading route for grain transport, and its strategic importance will be greatly enhanced by the Volga-Don Canal, now under construction and scheduled to handle principally such traffic as lumber, oil, and building materials. The Yenisey River is a main route connecting the Northern Sea Route with the interior of the USSR. The Lena River is another artery of traffic important to the Northern Sea Route. The Kolyma River in the northeastern section of the USSR is of vital importance to the newly developed industries of that region. The coal and timber of that area, for example, depend on the Kolyma River for transport to the industrial complexes of the Soviet Far East. The Amur is the leading river of the Far East and provides a main route of traffic for the Soviet Far Eastern industrial developments. The Amur, furthermore, is of particular importance to the shipyards and steel mills at Komsomovsk and to the oil refineries at Khabarovsk.

The inland water fleet is under the direction of the Ministry of the River Fleet, which has five chief Directorates, each responsible for a particular phase of operations. Each Directorate is subdivided into Shipping Administrations, of which there were 20 in 1947. 4/

II. Volume of Traffic.

1. Prewar.

Before World War I, Russian inland waterways were responsible for a significant, although declining, portion of all traffic. In 1913, inland water traffic totaled 37.1 million short tons, whereas the railroads hauled

146 million tons. 5/ Before 1917, inland waterways usually carried slightly more than 25 percent of all inland freight tonnage. Because of the relatively long hauls, furthermore, the ton-mile performance of waterways was well above 25 percent of all traffic. 6/ After World War I, inland water traffic continued to decline in importance in relation to other means of transportation, particularly railroads. (Table 2 includes a comparison of the performance of inland waterways in the USSR, excluding the Caspian Sea, in 1913, 1937, 1940, 1945, 1947, and 1950. 7/ Table 3 shows the seasonal variation of inland water traffic and the volume of leading commodities carried by Soviet inland waterways in 1935.)

2. World War II.

The share of total inland traffic carried by inland waterways during World War II rose to 14 percent in comparison with 8 percent in the prewar years. 8/ The increase in the share of total traffic carried by inland waterways probably reflected the enormous declines in railroad traffic resulting from losses of rail equipment and territory, rather than an actual increase of tonnage carried by the inland waterways. The great destruction resulting from World War II precluded achievement of the ambitious plans that the USSR had for expansion of inland water traffic. In 1943, for example, the plan was for the system to carry 160 million short tons of freight, as compared with 73.8 million tons in 1937. During the war, however, Soviet inland harbor facilities in the western and southern sections of the USSR suffered extensive damage. In addition, losses of vessels and barges were tremendous. A Soviet commission, appointed to investigate war losses, stated in September 1945 that the Germans sank or seized 4,280 cargo ships, passenger craft, and tugboats and 4,029 barges. 9/ With allowance for some probable exaggerations of losses claimed by the Soviets, it is a well-established fact that, despite the appreciable number of craft received as reparations after the war, the substantial net loss of inland water craft greatly retarded inland water transport development. (See Table 2. 10/)

3. Postwar.

Inland water transport is operating in the USSR at reasonably high levels, but the dates indicate that present traffic could be greatly increased if the USSR devoted necessary resources to that end. One of the few available summaries of traffic for a postwar year is contained in Table 2. It will be seen that while traffic had recovered somewhat by the end of 1947 from the very low levels of 1945, the actual reported performance in 1947 still was about 50 percent below the planned goals set for 1950 (100.9 million short tons). The plan for river transport in 1951, according to a press statement of the Minister of the River Fleet, contemplated a 15-percent rise above 1950 traffic.

Table 2

Inland Water Freight and Passenger Traffic in the USSR
(Excluding the Caspian Sea)
1913, 1937, 1940, 1945, 1947, and 1950 (Plan)

	1913	1937	1940	1945	1947	1950 (Plan)
Freight						
Total Volume Carried and Towed						
Million Short Tons	37.1	73.8	73.0	39.8	51.1	100.9
Billion Ton-Miles	19.8	22.7	24.8	13.0	17.8	33.8
Volume of Principal Goods Carried and Towed						
Timber						
Million Short Tons	N.A.	39.1	44.0	23.1	N.A.	56.9
Percent of Total Freight	N.A.	53.0	60.2	58.0	N.A.	56.4
Oil						
Million Short Tons	5.8	8.7	10.5	5.4	N.A.	10.5
Percent of Total Freight	15.6	11.8	14.3	13.5	N.A.	10.4
Grain						
Million Short Tons	6.5	4.7	5.6	N.A.	N.A.	6.3
Percent of Total Freight	17.5	6.4	7.6	N.A.	N.A.	6.2
Passengers						
Total Number Transported						
Millions	16.2	N.A.	73.0	38.5	48.0	73.0

Table 3

Monthly Traffic in the USSR
in the Most Important Inland Water-borne Commodities
(Excluding the Caspian Sea)
1935

Thousand Short Tons a/

Month	Timber in Rafts	Timber in Vessels	Oil	Grain	Other	Total Cargo
January-March	97	7	b/	44	106	254
April-May	6,100	2,206	2,068	1,127	3,305	14,806
June	6,300	1,822	1,664	665	2,056	12,507
July	6,445	1,813	1,072	520	2,391	12,241
August	6,115	1,775	1,067	376	2,294	12,127
September	4,115	1,456	857	384	2,339	9,651
October	1,920	1,263	969	771	2,528	7,451
November	218	290	541	183	977	2,209
December	b/	5	8	23	45	81
Total	31,310	10,637	8,246	5,093	16,041	71,327

a. The document from which this table was taken stated that figures were expressed in millions of tons. It is believed that this is an error of translation and that thousands was meant.
b. Negligible.

III. Present Capabilities.

1. Extent, Seasonal Availability, and Condition and Capacity of the Network and Port Facilities.

The total navigable length of the inland water network in the USSR is about 70,000 miles. Much of the system, however, is closed by ice for 4 to 6 months a year. The navigable lengths and navigation seasons of the major Soviet waterways are shown in the following table:

Table 4

Major Inland Waterways of the USSR 11/, 12/

Route	Navigable Length (Miles)	Navigation Season
Western Area		
Volga River	2,003	Late Apr to Mid-Nov
Moscow-Volga Canal	103	Late Apr to Early Nov
Kama River	756	Late Apr to Late Oct
Oka-Moscow System	669	Mid-Apr to Early Nov
Mariinskiy Canal System	358	May to Nov
Baltic-White Sea Canal System	575	May to Nov
Northern Dvina System	868	Mid-May to Late Oct
Dnieper-Bug Route	1,253	End of Mar to Early Dec
Eastern Area		
Ob River	2,309	Late Apr to Late Oct
Irtysh River	2,459	Early May to Late Oct
Yenisey River	1,967	Apr to Nov
Angara River	1,130	Apr to Dec
Amur River System	2,037	May to Nov
Kolyma River	860	Late May to Early Oct

The condition and capacity of the river ports is believed to be a matter of considerable concern to Soviet authorities, and the freight-handling capacity of these ports has been called the "weakest phase in Soviet inland waterway transport." 13/ The best available information on selected major Soviet river ports is indicated in the following table:

Table 5

Selected Major Soviet River Ports* a/ 14/

Port	Location	Remarks
Astrakhan	Volga River (right bank) 46°22'N 48°05'E	Major port for transfer of oil, lumber, cotton, and fish from Caspian roadstead fleet to river vessels; 76 percent mechanized in 1946; connection to railroad; shipyards; accessible to 12,000-ton river barges but not to Caspian Sea vessels; major oil storage facilities; port reported rebuilt.
Gor'kiy	Volga River (left bank) 56°20'N 44°00'E	Major port for oil, grain, cement, salt, machine tools, and finished industrial products; 87 percent mechanized in 1946; connection to railroad; shipyards; port reported rebuilt; probably accessible to 5,000-ton barges.
Irkutsk	Angara River (both banks) 52°17'N 104°18'E	Port handles grain, coal, and probably finished industrial products; road junction; connection to Trans-Siberian Railroad; shipyard; river depths off harbor, 9.8 to 13 feet.

* A major river port in the European USSR is defined as having adequate, mechanized cargo facilities, rail connections, and an annual volume of at least 300,000 tons or a trade volume of major importance for the respective area; in the Asiatic USSR it is defined as a principal port with an annual tonnage of at least 100,000 tons or a trade volume of major importance, without necessarily having good port facilities.
a. Capacity of barges is given in gross registered tons.

Table 5 (continued)

Selected Major Soviet River Ports

Port	Location	Remarks
Khabarovsk	Amur River (right bank) 48°28'N 135°05'E	Oil and coal port; road connections; connection to Trans-Siberian Railroad; shipyards; river base for Amur flotilla; major oil storage facilities; accessible to seagoing vessels of 2,000 tons at high water.
Kiev	Dnieper River (right bank) 50°27'N 30°30'E	Major port and trade center; connection to railroad; base of Dnieper fleet; shipyards; warehouses; river depth about 9.8 feet off harbor.
Krasnodar	Kuban' River (right bank) 45°02'N 39°00'E	Oil and grain port; connection to roads and railroad; terminus of pipe line from Maikop oilfields; shipyard; river depth off harbor probably regulated at 3.6 feet.
Krasnoyarsk	Yenisey River (both banks) 56°01'N 92°50'E	Grain, lumber, and coal port; good road connections; connection to Trans-Siberian Railroad; shipyard; accessible to boats of 9-foot draft at full water levels.
Kuybyshev	Volga River (left bank) 53°12'N 50°09'E	Major port for lumber, oil, construction materials, grain, salt, and fish; connection to railroad; shipyards; accessible to 8,000-ton barges.
Leningrad	Neva River (both banks) 59°56'N 56°15'E	Major exporting port; connection to railroad; shipyards; major timber storage facilities; modernization of port planned.

Table 5 (continued)

Selected Major Soviet River Ports

Port	Location	Remarks
Molotov	Kama River (left bank) 58°00'N 56°15'E	Oil port; 80 percent mechanized in 1946; connection to railroad; shipyard; probably accessible to 1,000-ton barges.
Moscow	Moskva River (both banks) 55°45'N 37°37'E	Central port of Volga system; probably completely mechanized; connection to railroad; shipyards; accessible to 8,000-ton barges.
Novosibirsk	Ob River (right bank) 55°02'N 82°56'E	Major port; completely mechanized in 1946; road connection; railroad junction; station of Trans-Siberian Railroad; transshipping point for cargo from Altai region; transfer point between rail and ship; shipyard; accessible to ships drawing 4 to 6.5 feet.
Saratov	Volga River (right bank) 51°30'N 46°05'E	Major oil, lumber, grain, coal, and fish port; connection to railroads; shipyards; accessible to 8,000-ton barges.
Shcherbakov	Volga River (right bank) 58°02'N 38°51'E	Major oil, grain, and building materials port; connection to railroad; shipyards; accessible to 8,000-ton barges from the Moscow-Volga Canal side and 3,000-ton barges from Middle Volga.
Stalingrad	Volga River (right bank) 48°40'N 44°30'E	Major lumber and oil transshipping point; 85 percent mechanized in 1946; connection to railroad; shipyards; port reported rebuilt.

Table 5 (continued)

Selected Major Soviet River Ports

Port	Location	Remarks
Yakutsk	Lena River (left bank) 62°03'N 129°43'E	Port handles grain, coal, lumber, probably also metal ores and metal products; shipyard; accessible to ocean-going vessels; trade volume expected to reach about 1 million tons a year.
Zaporozh'ye	Dnieper River (left bank) 47°48'N 35°11'E	Major grain port; connection to railroad; shipyard; harbor installations designed for annual transshipment of 1 million tons could be expanded to 5 million; prewar quay length about 8,850 ft; port reported rebuilt and modernized; river depth maintained at 4.5 feet off harbor.

2. Inland Water Fleet.

a. Size, Condition, and Distribution.

The inland water fleet situation in the USSR is summarized in Table 6. In addition to the tonnage covered by the table, the Caspian fleet consists of 119 ships over 1,000 GRT totaling 320,927 GRT. The fleet is divided as follows: 27 cargo ships, totaling 44,330 GRT, and 92 tankers, totaling 276,597 GRT. 15/

Many of the self-propelled vessels are old and of the stern - or side-wheeling type, and as many burn wood, their operations are notably inefficient. That the general condition of the entire fleet may be poor is suggested by frequent Soviet press demands for more and better maintenance. On the other hand, the probable attainment of the Fourth Five Year Plan for the construction of inland water craft would mean that about 30 percent of the self-propelled fleet and over 40 percent of the barge fleet would now be under 5 years old and presumably, therefore, in good condition.

b. Maintenance and Efficiency of Operations.

Frequent criticism by the Soviet press and radio indicates that although there has been some improvement, the quality and quantity of maintenance in the inland water fleet are, in general, extremely poor. The poor maintenance stems from two principal causes. The first cause is the low level of training among the workers; the second is the generally poor condition of repair and maintenance facilities. Although the USSR is dotted with ship repair yards of varying sizes and capabilities, previous studies indicate that their efficiency usually is very low.

Operating efficiency also is low. For example, according to a press release, Minister of the River Fleet Shashkov stated in March 1951 that traffic does not move according to schedule and that more efficient cargo handling at ports could have increased the quantity of freight hauled in 1950 by 1 million metric tons. The Minister also observed that some cargoes hauled by rail and road could move more profitably by water. This observation is confirmed by other press reports.

Table 6

Distribution of the Inland Water Fleet in the USSR (by Basin Groups)
1939, 1945, and 1950

Type of Vessel	Basin Group				
	Northern European USSR	Central European USSR	Southern European USSR	Eastern USSR (Siberia)	Total USSR
Self-propelled					
1939					
Total Horsepower					
Thousands	139.0	381.0	83.0	120.0	723
Percent of Total Horsepower	19.2	52.7	11.5	16.6	100

Table 6 (continued)

Distribution of the Inland Water Fleet in the USSR (by Basin Groups)
1939, 1945, and 1950

Type of Vessel	Basin Group: Northern European USSR	Central European USSR	Southern European USSR	Eastern USSR (Siberia)	Total USSR
Self-propelled					
1945					
Total Horsepower					
Thousands	113.0	295.0	53.0	151.0	612
Percent of Total Horsepower	18.5	48.2	8.6	24.7	100
1950 (Planned)					
Total Horsepower					
Thousands	174.0	422.0	124.0	192.0	912
Percent of Total Horsepower	19.1	46.3	13.6	21.0	100
Towed					
1939					
Total Tonnage					
Thousands	2,200.0	5,020.0	380.0	460.0	8,060
Percent of Total Tonnage	27.3	62.3	4.7	5.7	100

Table 6 (continued)

Distribution of the Inland Water Fleet in the USSR (by Basin Groups)
1939, 1945, and 1950

Type of Vessel	Basin Group				
	Northern European USSR	Central European USSR	Southern European USSR	Eastern USSR (Siberia)	Total USSR
Towed					
1945					
Total Tonnage					
Thousands	695.0	2,330.0	330.0	645.0	4,000
Percent of Total Tonnage	17.4	58.3	8.2	16.1	100
1950 (Plan)					
Total Tonnage					
Thousands	1,365.0	3,870.0	770.0	995.0	7,000
Percent of Total Tonnage	19.5	55.3	11.0	14.2	100

3. Materials and Manpower Requirements.

Tables 7 and 8, which follow, contain estimates of the steel and petroleum requirements of the Soviet inland water fleet as based on extremely general assumptions.

Table 7

Estimated Finished Steel Requirements of the Soviet Inland Water Fleet
(Excluding the Caspian Sea)
1949-52

Thousand Metric Tons

Year	New Construction	Repair	Total
1949	260.7	62.6	323.3
1950	267.1	68.7	335.8
1951	237.4	74.3	311.7
1952	323.8	80.5	404.3

Table 8

Estimated Petroleum Requirements of the Soviet Inland Water Fleet
(Excluding the Caspian Sea)
1949-52

Thousand Metric Tons

	1949	1950	1951	1952
Diesel Oil	101.8	109.2	118.3	128.2
Fuel Oil	147.7	158.5	171.7	186.1
Lubes and Grease	16.6	17.8	19.3	20.9
Total	266.1	285.5	309.3	335.2

On the basis of estimates of consumption by vessel the peacetime (1949) petroleum requirements of the Caspian Sea fleet have been calculated to be 544,906 metric tons annually. The 1941 Plan, 16/ which contains the most detailed material available on the manpower situation in Soviet inland water transport, stated that employment in 1941 totaled 256,910 persons. It has been estimated that the number of people employed in inland water transport totaled 292,000 workers in 1950.

4. Carrying Capacity.

a. Total.

Assuming that planned traffic goals are identical with capacity operations, a rough estimate of the present capabilities of Soviet inland water transport can be made. Traffic goals for 1950 called for the hauling of 100.9 million short tons of freight over an average distance of 335 miles for a total of 33.8 billion ton-miles. The capabilities of any transport system, however, depend largely upon the resources which are applied to it, and the USSR has clearly failed in this respect to capitalize completely on the potentialities of its waterways and their port areas.

b. By Areas.

The following table illustrates the relative traffic potential of the major river areas in the USSR:

Table 9

Planned Cargo Turnover in the USSR
By Major River Basin Groups
1950

Basins	1950 Plan (Billion Ton-miles)	1950 Plan (Percent of Total)
Moscow-Volga-Kama	24.14	71.5
Northern	3.98	11.8
Eastern	3.59	10.7
Southern	2.05	6.0
Total	33.76	100.0

c. By Specific Commodities.

The following table giving the volume of traffic in the USSR for specific key commodities in 1935 illustrates the relative importance and geographical distribution of these commodity movements in river traffic. With the exception of movements in certain limited sectors, it is probable that this pattern is typical of present-day traffic.

Table 10

Traffic in Major Commodities
over Some of the More Important Waterways in the USSR
1935

Thousand Short Tons

Rivers	Major Commodities					Total Cargo a/
	Timber in Rafts	Timber in Vessels	Mineral Building Materials	Grain	Oil	
Amur	426	6	b/	b/	b/	866
Dnieper	163	280	826	388	119.0	2,800
Don	b/	b/	106	310	62.0	831
Irtysh	12	361	b/	b/	b/	1,087
Kama	5,955	250	150	439	19.0	7,271
Neva	33	169	1,203	17	9.0	1,642
Northern Dvina	6,518	273	119	97	0.3	7,122
Ob	b/	b/	b/	b/	b/	1,126
Oka	251	608	798	42	276.0	2,350
Onega (Lake)	889	168	134	3	b/	1,202
Sheksna	626	315	94	131	5.0	1,320
Sukhona	773	516	25	15	1.1	1,370
Svir	672	1,206	440	12	9.0	2,370
Volga	3,771	1,771	577	1,187	7,319.0	18,312
Yenisey	129	97	b/	b/	b/	458

a. Includes other cargoes not enumerated.
b. Information not available or negligible amount of traffic.

IV. Potential Capabilities.

1. New Construction.

The actual present capabilities of the USSR for construction of inland water craft are unknown. Although the USSR has major plans for the construction and improvement of waterways and canals, few data are available on actual progress toward Plan fulfillment. Most of the Plan projects concern the European area, but waterways in central and eastern USSR also are under development. Of the rivers, the Volga system probably is receiving the most attention, with numerous dams and canalization projects planned to increase its navigability. Locks also are scheduled to be improved or enlarged on this route. The Manych Canal project to link the Don River with the Caspian Sea is under way, a 225-mile section from the Don having been completed before World War II. Although its ultimate completion is believed to be an important objective of Soviet inland-waterway planning, there is little evidence to indicate that completion of this canal is considered to be a major Soviet construction project at this time.

The Volga-Don Canal project, a long-heralded goal of Soviet inland waterway planners, apparently is receiving much attention and may be completed before the originally planned date of 1955. Completion of this project may bring about a revolutionary change in Soviet water transport, since ships will be able to move freely from the land-locked Caspian Sea up the Volga River, over the Don, and into the Black Sea. It is possible to make only the most general estimates as to its ultimate capacity, but under present plans the route will allow the passage of vessels up to 11.8 feet in draft. 18/ The 600-mile-long Turkmenian Canal project, which will furnish water transport and irrigation for the important agricultural area of the Turkmen SSR, is another important objective of Soviet inland water planning currently receiving considerable attention in the press, although the extent of work completed is not known.

2. Foreign Acquisitions.

Western European yards are constructing very few small craft for the USSR. Finland is making the major portion of its deliveries under the reparations program, but Finnish shipyards also have some straight commercial contracts for the construction of vessels for Soviet account. These ships are tugs, fishing craft, and a few small cargo boats. The Satellites are delivering vessels of somewhat the same type as Finland, with possibly more emphasis upon small cargo boats. Acquisitions from all foreign sources may total as much as 50,000 GRT annually.

In wartime the opportunity for the USSR to secure substantial quantities of vessels from overrun territories might be great, but it is believed that in most instances such vessels would be employed where found rather than transported to the USSR. The possibilities of foreign acquisition for the Caspian fleet are slight. The Caspian Sea is land-locked except for the small craft able to pass through the upper Volga.

3. Diversion of Traffic to Other Means.

The USSR, according to the Fourth Five Year Plan, is concerned with diverting traffic to, rather than away from, the inland water system. During World War II, diversion of traffic also was toward, rather than away from, inland waterways. The share of traffic carried by inland water rose during that period from the prewar 8 percent to a reported 14 percent, probably because of the proportionately greater damage which the railroads suffered. 19/ On the basis of World War II experience, it appears that in the event of war there might not be any considerable diversion of normal waterway traffic to other media of transport.

Caspian Sea traffic is limited almost entirely to bulk cargoes, and rail lines around the area are so few that it is considered impossible for any substantial amount of Caspian traffic to be diverted to other media. In addition, the shortage of tank cars would sharply restrict the diversion of large shipments of oil from Caspian tankers to rail lines.

4. Improved Maintenance and Repair and Increased Efficiency of Operations.

Maintenance is at an extremely low level in the Soviet inland waterway system, but it is probable that there will be improvement during peacetime, if past trends and future goals are any guide. Operations likewise are not satisfactory at present. It is probable that, during peacetime, efficiency will improve somewhat. In wartime, present operating levels would be maintained only through the exercise of such extreme measures as outright military control, round-the-clock operations, extensive overloading of ships, possibly the diversion of skilled labor from other fields, and severe penalties for such malpractices as accidents, absenteeism, and personal inefficiency.

V. Limitations, Intentions, and Vulnerabilities.

1. Limitations.

The Soviet inland waterway system is not of sufficient importance to over-all Soviet transport capabilities as to constitute a limiting factor on any broad course of national action which might be contemplated by the USSR. There are certain aspects of Soviet inland water transport, however,

which are noteworthy for their retarding effect within a narrower frame of reference. The physical characteristics of much of the Soviet river system, particularly in Asia, for example, impose restrictions on its utility as a major means of transport and, in effect, prevent the USSR from achieving certain possible objectives. Except in the western USSR, virtually all major Soviet rivers are north-south lines of communication, while the major lines of traffic movement are east-west lines, especially east of the Urals. Consequently, the rivers in the central and eastern areas cannot be employed as alternatives to the Trans-Siberian Railroad to relieve the traffic burden on that line either in peacetime or in an emergency caused by wartime disruption of this major transcontinental route. Their value in the economic exploitation of the Soviet North is limited, moreover, by their direction of flow, from south to north. The preponderance of river traffic in the central and eastern areas consists of raw materials being shipped out of the area to industrial centers elsewhere in the Soviet Union. If the direction of flow of the rivers were toward the Trans-Siberian Railroad, which is available for year-round service, the streams would be far more useful. Flowing into the Arctic Ocean, they deliver downstream traffic into an area closed by ice conditions much of the year. The barriers set by the topographic features of the inland waterways are obviously impossible to overcome except to a minor degree and at a very slow rate. Possibilities for expansion and increased efficiency of the system are discussed elsewhere in this study.

2. Intentions.

The operations of the inland water fleet do not reveal any significant conclusions as to Soviet intentions except in the narrow and immediate sphere of improvement in capabilities. The major conclusion of strategic significance which might be drawn from present inland water transport policies is that plans to increase capacity of the inland water routes may be tied into some long-range over-all plan to free the rail lines of as much responsibility as possible for the transport of relatively unessential bulk commodities, thereby assuring greater mobility and flexibility for the rail movement of high-priority traffic.

3. Vulnerabilities.

a. Peacetime.

Although the West is a source of equipment and, to some extent, vessels, the volume of deliveries from the West has been relatively small, and the complete closing of this source probably would have only a minor retarding effect. Since the system itself is entirely within the boundaries of the USSR,

there are practically no measures which the West can take against it in peacetime.

b. Wartime.

Most of the vital sectors of the Soviet inland waterway system are in the area west of the Urals and possibly are more accessible to attack than are the Asiatic waterways. Severance of the traffic flow on the Volga would be particularly serious for the USSR because this river and its tributaries are by far the most important waterway system of the USSR. In the east, Amur River shipping presents a major vulnerability. In the event of decisive attacks against this waterway, the industrial complexes along that river would be seriously hindered. The extensive use of locks and sluices in many areas, moreover, makes the entire system highly vulnerable. A determined and prolonged campaign by air and mine attacks against Caspian shipping could damage seriously the Soviet potential for oil transport. In view of the absolute essentiality of this traffic, any serious reduction would be a major blow against the Soviet military potential.

APPENDIX A

GAPS IN INTELLIGENCE

On the whole, knowledge of inland water transport is much less complete than is knowledge of merchant shipping, the primary reason being that inland water traffic, fleets, and facilities are much less susceptible to foreign surveillance than are merchant shipping operations. Furthermore, there is much less interest in the operations of the Soviet inland water fleet on the part of intelligence collectors. The important role which merchant shipping plays, however, in support of domestic activities contributing to Soviet military capability is sufficient reason for the expansion of intelligence coverage and the study of inland water transport.

Much organized information is needed on such topics affecting capabilities as vessel annual output and network construction levels, traffic diversion, improved maintenance, and operating efficiency. Manpower data are needed in general terms. Intelligence on labor output, availability, and requirements also are of considerable significance in estimating actual or potential transport performance.

One over-all gap in intelligence of very great importance is the almost complete absence of accurate and up-to-date information on all aspects of Caspian Sea operations (fleet, traffic, and ports). For this reason, Caspian shipping has been mentioned only infrequently in the foregoing discussion. That the area is of vital and increasing importance, however, is illustrated by the fact that the USSR maintains more than twice as much tanker tonnage in the Caspian Sea than in the entire ocean-going fleet.

There are a number of topics of importance concerning Soviet inland water transport in general on which intelligence can be said to be fair although in need of considerable expansion. Among these topics are fleet and port facilities, administration and organization, basic fleet statistics, maintenance, and operating efficiency.

Analysis of available Soviet data does not afford a clear view of what the inland water transport system actually is doing or what it is capable of doing. Without such information there can be no clear idea of either the present importance of the inland water fleet or what can be expected of the system in the future. The lack of data regarding performance during World War II, for example, causes a gap in the knowledge of the potential ability of the system to contribute to wartime operations. The lack of data on present traffic performance limits the ability to assess current operations in the light of past achievements and future plans.

APPENDIX B

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